Executive Summary of *A Flood Risk Assessment of the San Jacinto River Waste Pit Superfund Site*

SAMUEL D. BRODY, PHD
WITH: RUSSELL BLESSING, KAYODE ATOBA, WILL MOBLEY, MORGAN WILSON
June 2014

The San Jacinto River Waste Pits site, located in Channelview, Texas, consists of a series of impoundments (pits) that were constructed on the west bank of the San Jacinto River near the Interstate-10 Bridge between October 8, 1964 and February 15, 1973. Paper mill wastes containing polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) were dispensed into these pits during the 1960s and 1970s. Since their construction, groundwater extraction, dredging, sand mining, river currents, and surge have eroded the containment berm, which has allowed a portion of the impoundments to be submerged under water (Anchor, 2013). No studies have explicitly examined the exposure of these waste pits to riverine and surge-based flood events, which are likely the primary driver of the deterioration and subsequent release of pollutants from the superfund site. Existing reports only superficially address the flood risk associated with the site and do not consider the impact of previous events, changing risk conditions, or potential wave action from storm surge. Moreover, a thorough socioeconomic profile and consideration of future growth is absent (Anchor QEA, LLC., 2013)

This report addresses this lack of research by examining three major issues associated with the superfund site: (1) the physical and environmental context; (2) the socio-economic context; and (3) the level of flood risk. The major findings of the risk assessment include the following:

- The waste pits are extremely vulnerable to repeated inundation from hurricane storm surge, storm-induced velocity wave action, and high volume river flows from rainfall events.
- The waste pits are surrounded by high and very high levels of socially-vulnerable populations. Of particular concern is the above average number of children under five years of age living in close proximity to the site.
- Residences surrounding the waste pits have already been inundated by flood waters stemming from the waste pit site. Future development patterns will increase the risk of homes being flooded with potentially contaminated water.
- The threat of human exposure when the waste site was constructed during the 1960's was much lower than it is today. Historical development has significantly increased the amount of people that live within a few miles of the site and this trend is projected to continue well into the future.

More serious attention needs to be given to the local socioeconomic and built environment characteristics of this hazardous site. The threat of future surge and riverine flood events coupled with a changing climate and increasing development all have a ratcheting effect on the amount of impact this superfund site could inflict on surrounding communities. As risk of failure increases so too does the risk of exposure from flood-induced water vectors. Bioaccumulation is already occurring, exposing local fisherman and residents to harmful chemicals consumed by the fish and crab. Sediment contaminated with dioxins could potentially be scoured from the site and transported into neighboring residential areas, school, wastewater management facilities, and a reservoir that provides drinking water. That said, the installation of the temporary geomembrane by the EPA is a first attempt to prevent leaking and exposure, but this is likely the first of many repairs that are likely to occur due the vulnerable location of this site.

The findings of this flood risk assessment clearly indicate that the waste pits should be fully removed as outlined by Alternative 6 in the Feasibility Study conducted for CIMC and International Paper, Inc. (Anchor QEU, 2013). The site is in an extremely vulnerable location susceptible to repeated inundation, which will only increase in the future. There is insufficient evidence that any proposed on-site remediation alternative can effectively stabilize the pits over the long term and prevent the leakage of contaminants to surrounding areas. The information contained in the full report provides a more complete understanding of the flood risks associated with the site and can offer guidance to decision makers as they contemplate future mitigation actions.